

# Scenario Considerations

FAA/Eurocontrol AP5 & 9 Practitioners Workshop  
12 March 2003

Belinda G. Hargrove  
TransSolutions

Peter Crick  
Eurocontrol Experimental Centre

# Domain and Scope

- ✈ What needs to be answered?
  - Define problem and performance measures
- ✈ Whose point of view?



ATC



Pilot

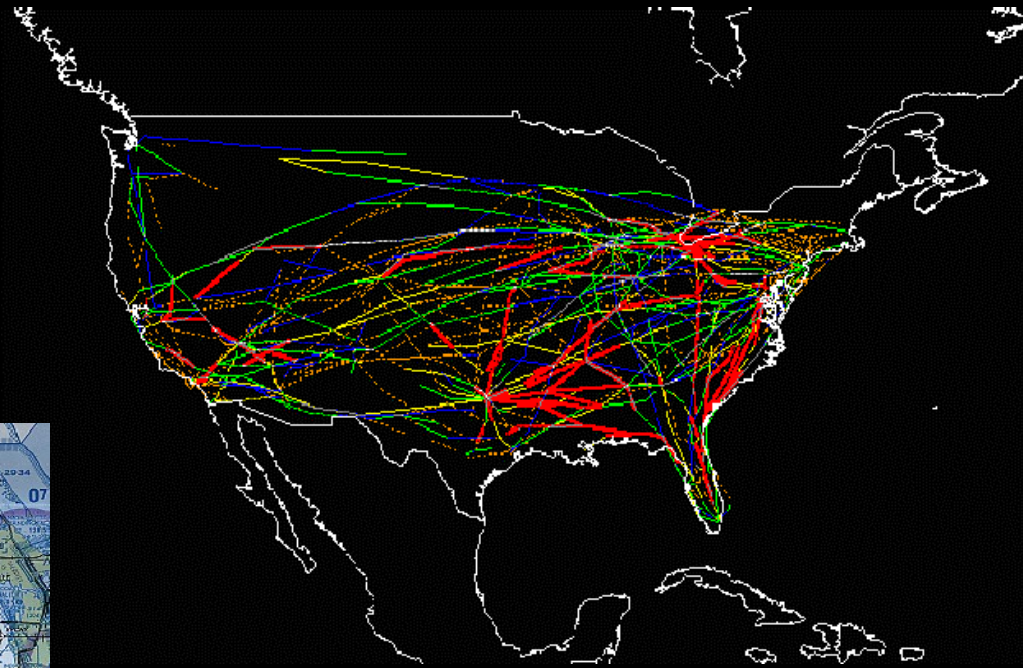
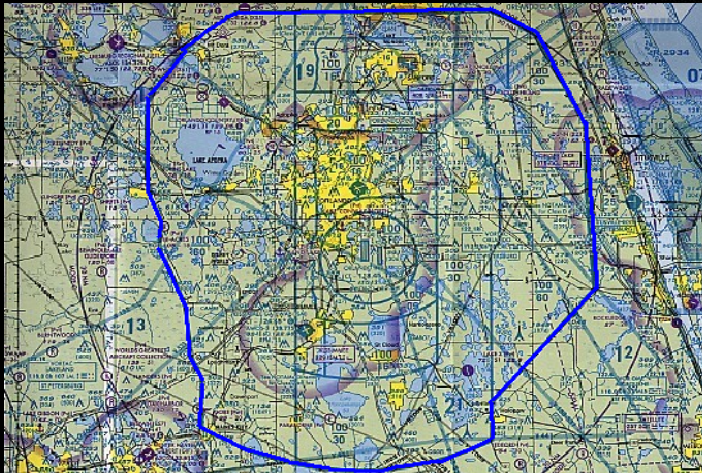


Planner



# Domain and Scope

- ✈ Model boundaries
  - Airfield only or airspace only or airfield and airspace



– Region Vs. Continent





One Airport...

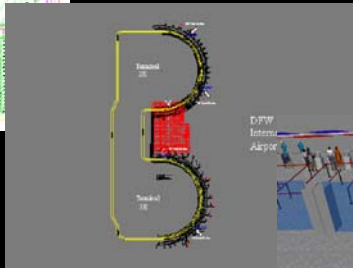




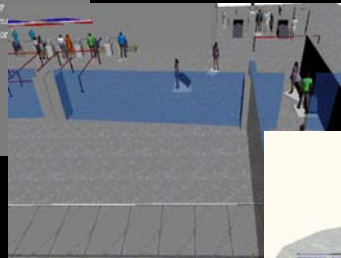
# ...Multiple Models



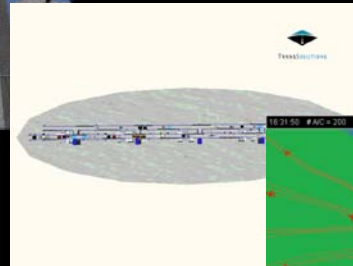
Parking Garage



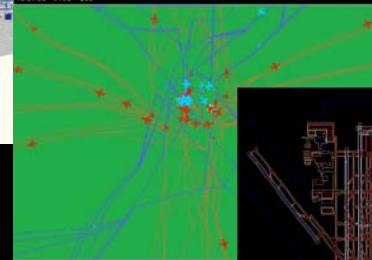
People Mover System



Terminal



Bag System



Airspace

Airfield



Real Time Simulator

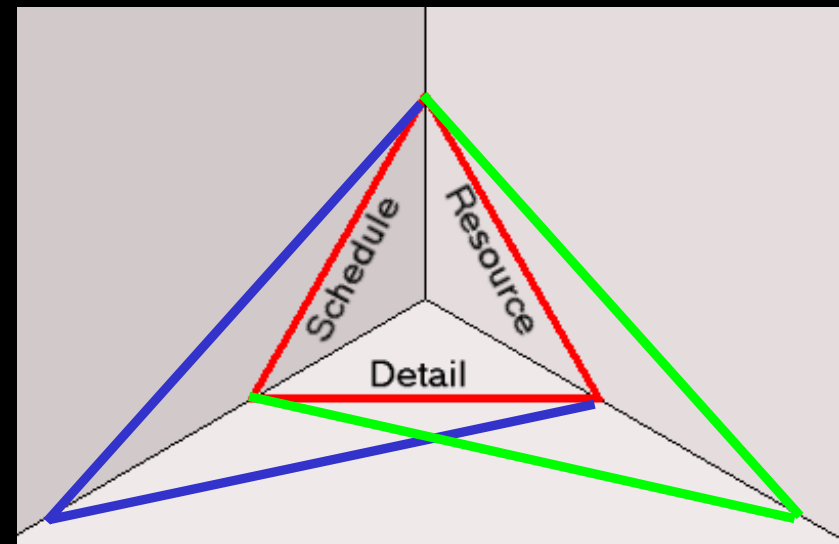


TRANSOLUTIONS



# Fidelity

- ✈ How close does model reflect real system?
- ✈ Which variables are significant?
  - Tradeoff between Detail / Schedule / Resources

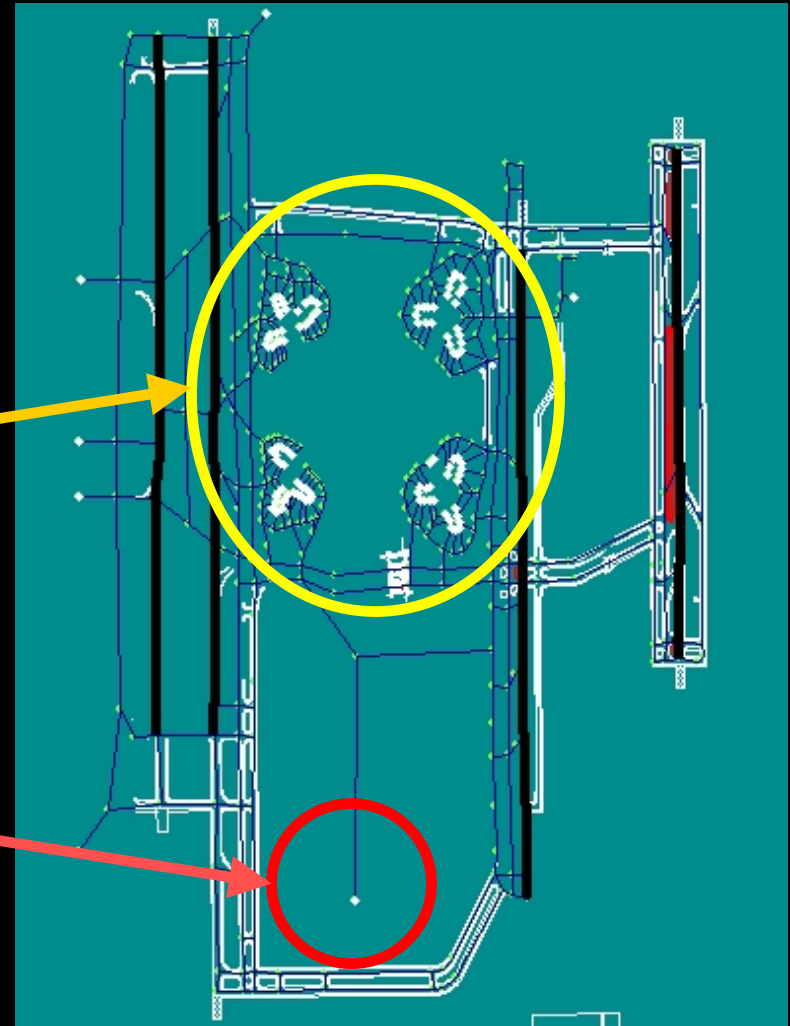


# Fidelity

→ Level of Detail?

Multi nodes for  
multi gates

Single node for  
multi gates

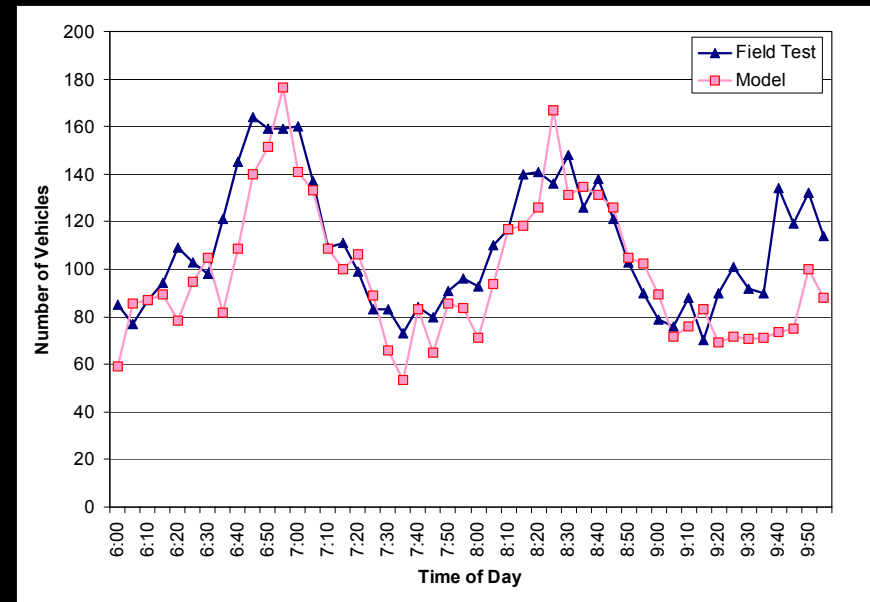


# Verification and Validation

→ Is the model performing as intended?

→ How to validate the model

- Compare output with operational data
- Independent data source from input
- Communicate with the user who understands the system





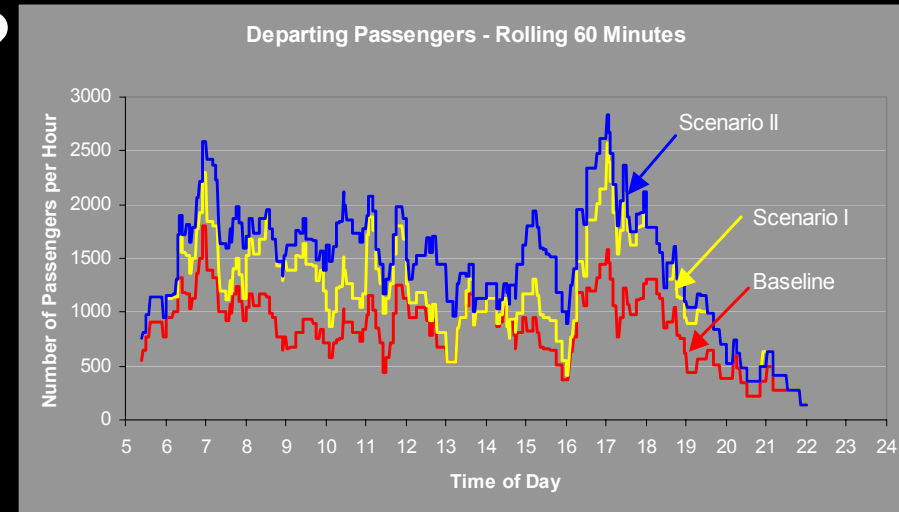
# Verification and Validation

- ➔ Transfer confidence from modeler to user/client
  - Ensure model usefulness will be realized
  - Only a valid model can be used to predict the outcome of alternative scenarios

# Duration of Scenario

✈ Which day & what time?

- Full day
- Peak hour
- Peak arrival
- Peak departure



✈ Seasonal and weather factors?



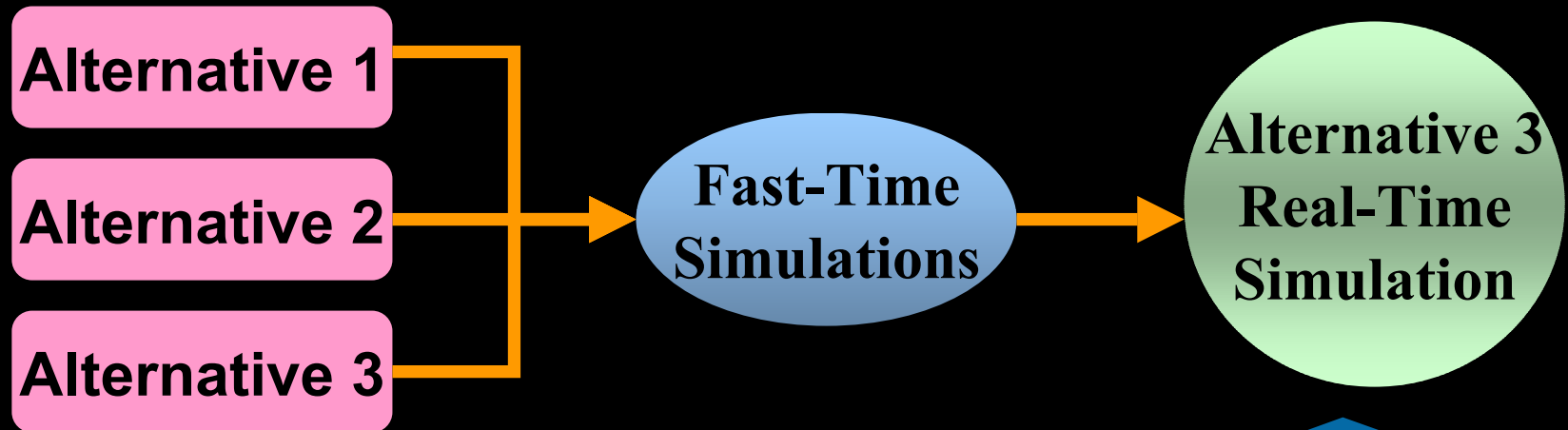
# Decision Support Tools

- ✈ Old or current tools may implement logic different than new operational concepts
  - Is there a possible workaround or modeling “trick”?
  - Program special subroutines?



# Experimental Design

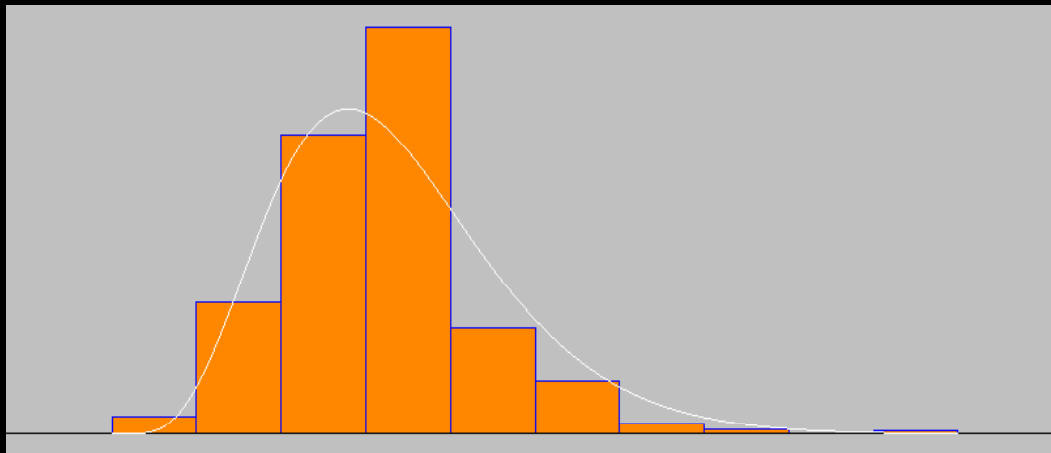
- Possible alternatives
- How do alternatives differ?
- Prioritize to reduce alternatives



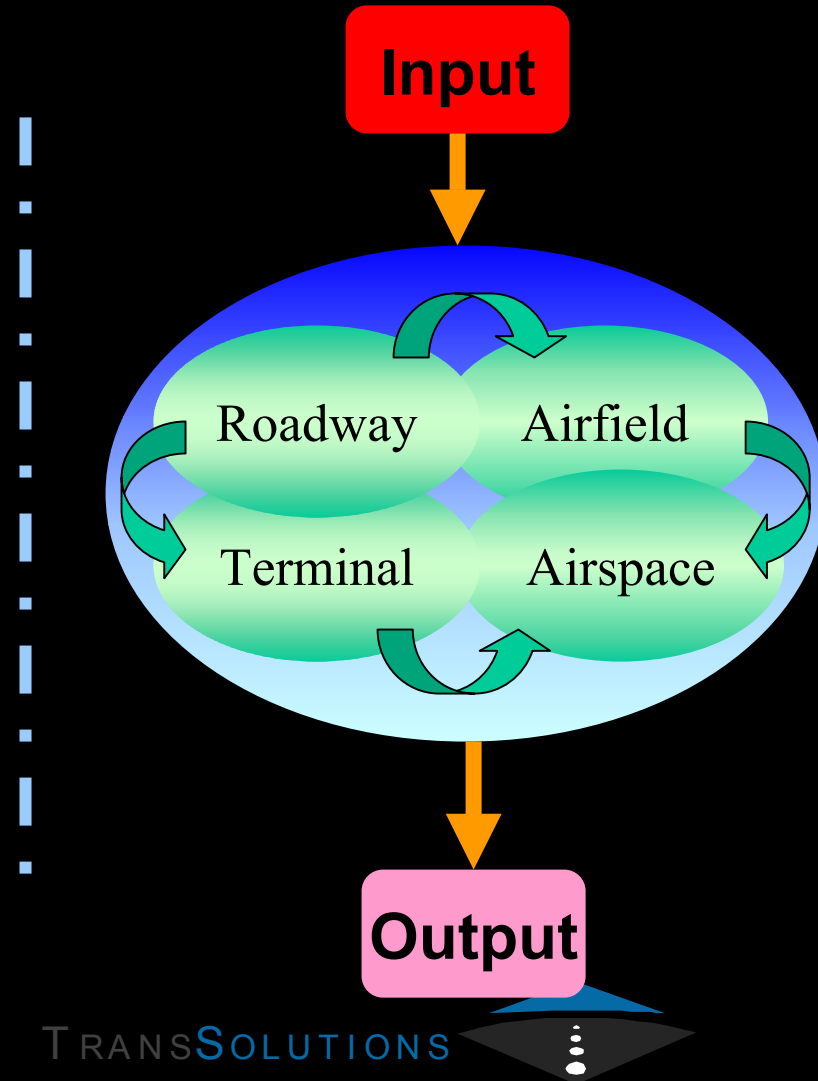
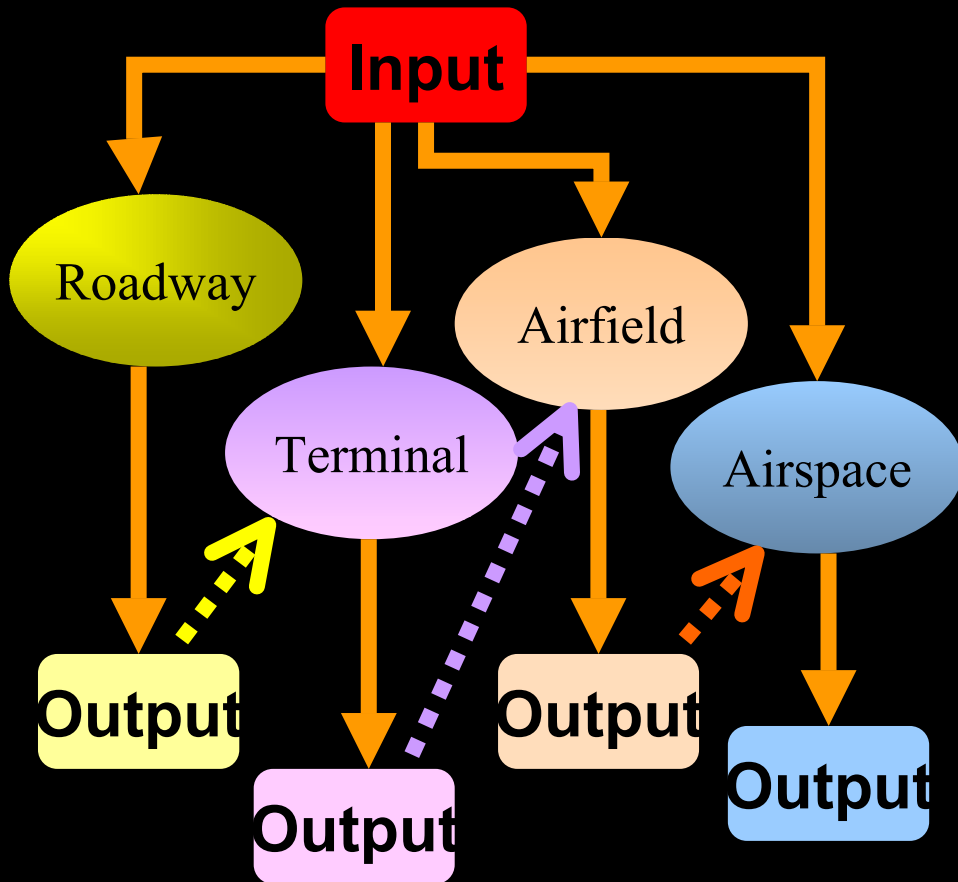


# Experimental Design

- ✈ Number of iterations
  - Confidence interval and confidence of results
- ✈ Vary one parameter at a time for independent scenarios

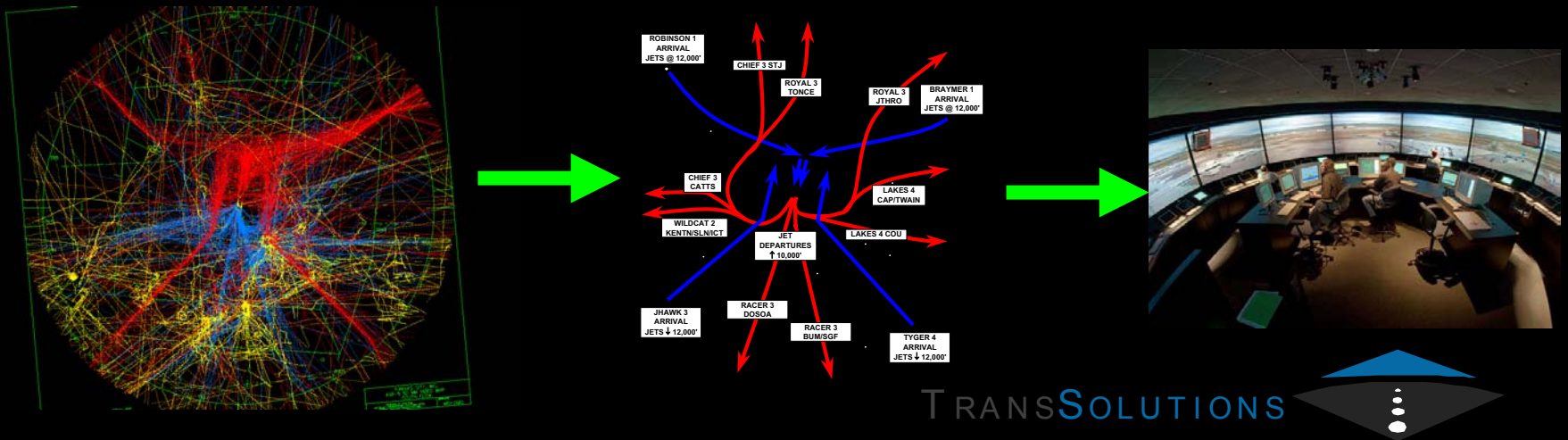


# Multi-Modal/Inter-Modal



# Scenario Development Software

- ➔ From radar flighttracks to simulation input file
- ➔ Populating model databases
- ➔ Map generation



# Discussion Topics

- Realistic?
- Simplifying assumptions - too simple?
- Reliable?
- Valid Model?
- Well-founded conclusions?





# Contact Info

Belinda G. Hargrove  
Managing Principal  
TransSolutions  
Fort Worth, TX USA  
+1.817.359.2958  
bhargrove@transsolutions.com

Peter Crick  
Eurocontrol Experimental  
Centre  
Bretigny, France  
+33-(0)-1-69 88 75 58  
peter.crick@eurocontrol.int